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| APPLICATION NO.  | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/052,553   | 01/23/2002  | In Chul Jeong        | 0465-0838P-SP       | 5490             |
| 2292   | 7590        | 05/02/2006           | EXAMINER            |                  |
| BIRCH STEWART KOLASCH & BIRCH<br>PO BOX 747<br>FALLS CHURCH, VA 22040-0747 |             |                      | STINSON, FRANKIE L  |                  |
|  |             |                      | ART UNIT            | PAPER NUMBER     |
|  |             |                      | 1746                |                  |

DATE MAILED: 05/02/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/052,553

Applicant(s)

JEONG ET AL.

Examiner

FRANKIE L. STINSON

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 12 April 2006.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1,3,4,9-22 and 24-28 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 13-16, 18 and 24-28 is/are allowed.
- 6) ☒ Claim(s) 1,3,4,9-12, 17 and 19-22 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 1/10/06
- ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: \_\_\_\_\_

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1. In view of Applicant's remarks filed April 12, 2006, the Final Rejection dated April 12, 2006 is hereby withdrawn in favor of the following action

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1, 3, 4, 19, 20 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fukumoto et al. (U. S. Pat. No. 6,282,928) in view of either EPO'700 (European Patent Office 0 485 700) or Leonard (U. S. Pat. No. 3,012,333).

Re claim 1, Fukumoto (see figs. 7-9) is cited disclosing a washing machine comprising.

a first tub (14);

a second tub (13) disposed in the first tub;

at least one circulation duct (24) operatively coupled with the first tub to receive air from the second tub, dehumidify the air and recirculate the dehumidified air back into the second tub to dry laundry in the second tub during a drying operation of the washing machine; and

a water supplying duct (43) for supplying external water to a part of the at least one circulation duct to flow down the duct from said part and come in contact with air received in the duct to dehumidify the air in the at least one circulation duct, that differs from the claim only in the recitation of the water supplying duct supplying water to an *upper* part of the circulation duct and dehumidifying the air primarily by water flowing along an inner wall of the duct in direct contact with the air and the circulation duct

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having a plurality of grooves with helical configurations for prolonging a heat exchange time period of the hot humid air by reducing the flow of speed of water along the inner walls of the circulation duct. EPO'700, and Leonard are each cited disclosing an air circulation duct having a plurality of configurations (12 in EPO'700 and 23, 24 in Leonard) for prolonging a heat exchange time period of the hot humid air by reducing the flow of speed of water along the inner walls of the circulation duct. It therefore would have been obvious to one having ordinary skill in the art to modify the device of Fukumoto, to include configurations as taught by either EPO'700 or Leonard, for the purpose of enhancing the removal of water from the circulating drying air. As for the configurations being helical grooves, the same is deemed to be of little patentable significance since as applicant discloses the following: FIG. 2 shows a cross-sectional view of the circulating duct 20 according to one embodiment of the present invention. As shown, preferably, the circulation duct 20 has a plurality of grooves or indentations 20a on its inner walls for prolonging a heat exchange time period of the hot and humid air by reducing the flow speed of the water along the inner walls of the circulation duct 20.

However, the shape, form or configuration of the inner walls of the circulation duct 20 is not limited to such, but may be of any shape or form that can reduce the water flow speed along the inner walls of the circulation duct 20. For example, as shown in FIG. 3, the circulation duct 20 may have helical grooves 20b

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formed on the inner walls of the circulation duct 20, which reduces a flow speed of the water flowing down from the upper part of the circulation duct 20. This improves a dehumidifying efficiency of the washing machine 100. Therefore the critically of the helical grooves is not seen. Clearly the configurations as shown in EPO'700 and Leonard slow down the speed of the water for more efficient water removal. As for the water supply location, EPO'700 and Leonard are each cited disclosing that it is old and well known to position in a drying circuit/duct, a water supply in an upper part of their respective circulation duct. It therefore would have been obvious to one having ordinary skill in the art to modify the position of the water supplying duct in Fukumoto, to be positioned in an upper part of the circulation duct as taught by either EPO'700 or Leonard, for the purpose of increasing the length of time the moisture laden air from the tub, contacts/mixes with the cooling/condensing water, thereby increasing the amount of moisture removed from the air traveling there through. This effectively creates a longer/larger cooling surface area of the duct. Re claim 3, Fukumoto discloses the fan (26) and heater (25). Re claim 4, no patentable distinction is deemed to exist between the fan as claimed and the fan as taught by Fukumoto, EPO'700 or Leonard. Re claim 19, Fukumoto discloses the pulsator (16, 19) Re claim 20 and 21, Fukumoto discloses the drain duct (22) and the spaced circulation duct (24).

4. Claims 9, 11 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over the applied prior art as applied to claim 1 above, and further in view of WIPO'169 (WIPO 93/17169).

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Claims 9 and 11 define over Fukumoto only in the recitation of a fan, for supplying of external air to an outer surface of the circulating duct. WIPO'169 (see page 4, lines 21-25, see fig. 1) is cited disclosing a fan (19) for supplying external air to the outside surface of the circulating duct (13) as claimed. It therefore would have been obvious to one having ordinary skill in the art to modify the device of Fukumoto, to include a fan as taught by WIPO'169 for the purpose of enhancing the water removal efficiency of the condenser. Re claim 17, no patentable distinction is deemed to exist between the fan as claimed and the fan as taught by Fukumoto, Leonard, EPO'700 or WIPO'169. The same are the functional equivalent of each other in that they both are employed to move external air to circulation duct for dehumidification purposes.

5. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over the applied prior art as applied to claim 1 above, and further in view of either Kim (U. S. Pat. No. 5,277,210) or Taylor (U. S. Pat. No. 4,103,433).

Claim 12 defines over the applied prior art only in the recitation of fins on the circulation duct. Kim (see fig. 1 and 2) and Taylor are each cited disclosing that it is old and well known to provide external fins on a circulation duct in a washer/dryer. It therefore would have been obvious to one having ordinary skill in the art to modify the duct of Fukumoto, to include fins as taught by either Kim or Taylor, since it is old and well known in the art to employ fins on a dehumidifying duct for the purpose of dissipating heat for a heat exchange function.

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6. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over the applied prior art as applied to claim 1 above, and further in view of Krupsky U. S. Pat. No. 3,402,576 or Brucken et al. (U. S. Pat. No. 3,216,126).

Claim 10 defines over the applied prior art only in the recitation of the

external air supplying duct for supplying external air towards the at least one circulation duct, said external air supplying duct has having an outlet disposed in the said at least one circulation duct; and

an air fan disposed to draw the external air into the external air supplying duct.

The patents to Brucken (as at 82) and Krupsky (as at 81) are cited disclosing that it is old and well known to provide a laundry dryer, which also comprises a washing machine, external air supplying duct for supplying external air towards the at least one circulation duct, said external air supplying duct has having an outlet disposed in the said at least one circulation duct; and an air fan disposed to draw the external air into the external air supplying duct. It therefore would have been obvious to one having ordinary skill in the art to modify the device of Fukumoto, to include an external air supply as taught by either Krupsky or Brucken, for the purpose of allowing the entry of fresh air to the drying air circuit as is common in the art. As for the external air fan, in the arrangement of Brucken, external air is forced into the circulation duct by the fan already, to employ a second fan, or relocated the fan to the entrance, is deemed to be a mere extension/duplication of the teachings of Brucken (see MPEP 2144.04 REVERSAL, DUPLICATION OR RE-ARRANGEMENT OF PARTS).

7. Claims 13-16, 18 and 24-28 stand allowed.

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8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. In Matsch, Phelps, Candor, McCormick, Gray, Jr. et al., Plumer, Behrens, Pinder, Rodgers, Anderson, Sarukahanian et al., Fijas, Gunawardena and Eesley et al., note the water removal means.

9. Applicant's remarks with respect to claims 1, 3-4, 8-28 have been considered but are moot in view of the new ground(s) of rejection.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to FRANKIE L. STINSON whose telephone number is (571) 272-1308. The examiner can normally be reached on M-F from 5:30 am to 2:00 pm and some Saturdays from approximately 5:30 am to 11:30 am.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Barr, can be reached on (571) 272-1700. The fax phone number for the organization where this application or proceeding is assigned is 571-272-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only.

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Fls



FRANKIE L. STINSON  
Primary Examiner  
GROUP ART UNIT 1746